

MEMO  
WHITMOYER LABORATORIES, INC.  
MYERSTOWN, PENNA., U. S. A.

Date June 26, 1978

To Mr. H. M. Huffman

From Mr. L. J. Croesus

95  
cc: Mr. F. A. Dangle  
Mr. J. P. Grab  
Mr. G. P. Hoover  
Mr. R. T. Kirst  
Mr. T. E. Long  
Mr. R. S. Rosera

DATE STAMP

135357

Subject: ASSESSMENT OF THE HEALTH EFFECTS OF ARSENIC

This writer is presently studying a preliminary external review draft released by EPA at the end of April 1978, by the above title.

A portion of our stack emissions from waste evaporation have obviously been condensing and dropping out on the nearby farmer's fields. Cattle are attracted to these areas because of the high salt content. One of the points made in the draft is that arsenic metabolism differs with species. Along these lines, everyone should be familiar with the following paragraph taken from the draft:

*L. J. Croesus*  
Lloyd J. Croesus

LJC:lcb

AR100296

blood of rats was primarily in the hemoglobin. Because of this storage of arsenic in the red blood cells, where it remains for the lifetime of the cell, the rat is a poor model for human metabolism.

Dutkiewicz (1977) observed the effects of the route of administration on the distribution and elimination of arsenic in rats. Both intravenous and intratracheal administration of sodium arsenite caused immediate distribution of arsenic to most tissues, whereas skin application and gastrointestinal administration caused much lower arsenic concentrations in tissues. These data are summarized in Table 3.

Peoples (1964) fed arsenic acid (pentavalent arsenic) at levels of 0, 0.05, 0.25, and 1.25 mg/kg daily for 8 weeks to lactating cows in order to determine whether arsenic appeared in their milk. After 8 weeks the arsenic levels in tissue were low, even in cows receiving the highest doses. Highest concentrations were in the liver, kidney, and spleen. Analysis of the blood showed no increase in arsenic. Lack of arsenic storage in the tissues was explained by the arsenic acid content of the urine, which nearly equalled the daily intake. Peoples concluded that the tissues store little arsenic and that "these low levels are rapidly depleted ... and represent a 'transit' period rather than true storage of arsenic." Peoples found that all tissue-bound arsenic was in the pentavalent form and that none was reduced to the trivalent form. No arsenic appeared in the milk, an indication of a blood-mammary barrier to arsenic in cows.